

Study of ABO and Rh (D) Blood Groups among Gangadikara Vokkaligas of Mysore, Karnataka

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ABSTRACT Data are presented on frequency distribution of the ABO and Rh (D) blood groups among the Gangadikara Vokkaligas of Mysore, Karnataka, India. The O group recorded the highest frequency, followed by A and B. The incidence of Rh (D) negative was 2.67% and the gene frequency of recessive *d* allele was 0.1633. The results of the present study are compared with other caste populations of Karnataka.

INTRODUCTION

Blood groups being the simple and most appropriate genetic markers still continue to rule in studies of human population variation and also it is available tool in blood transfusion, forensic medicine and paternity disputes (Bhasin et al. 1994; Bhasin and Walter 2001). In view of the importance of blood groups in population characteristics, the present investigation was carried out to study the distribution of the ABO and Rh (D) blood groups among the Gangadikara Vokkaligas of Mysore, Karnataka state.

MATERIAL AND METHODS

The name Vokkaliga originated from 'vokku', which means 'to thresh grain'. Those who live with cultivation as their main occupation are known as 'Vokkaligaru'. Their main profession is agriculture and is similar to Kurmi caste of North India or Vellalar of Tamil nadu. The Vokkaligas are also called *Gowdas*, and are found scattered almost all parts of the Karnataka state. (Nanjundayya and Iyer 1930). Morasu Vokkaligas, Gangadikara Vokkaligas, Reddy Vokkaligas, Kunchitiga Vokkaligas, Hallikaru Vokkaligas and so on are important endogamous divisions of Vokkaligas. Kannada is their mother tongue and use Kannada script. The Vokkaligas of the Mysore are mostly Gangadikars of endogamous division. They are mostly non-vegetarians. Cross cousin marriages are allowed. Early marriages are common particularly among females. Generally bury the dead, burnt if diseased. Gangadikara Vokkaligas are worshipping their clan deity at the primary

level; village deity such as 'maramma', 'durgamma', 'veerabhadreswara' etc. and deities of the wider pantheon such as Shiva and Vishnu are also worshiped. In Gangadikara Vokkaligas family is generally patriarchal, patrilineal, and patrilocal type. Nuclear family is the predominant and joint families are also noted. Endogamy at the community level and exogamy at the deity level are the rules of marriage. Ragi and Rice are main staple food. They domesticate cattle, sheep and fowls. The community has many entrepreneurs, scholars, and creative artists, white-collar employees, teachers, administrators, doctors, engineers and defense personnel's, as its members. (Singh 2003)

For the present study the blood samples were collected randomly from unrelated 150 Gangadikara Vokkaligas of Mysore. These were typed for the ABO and Rh (D) blood groups by serological methods of Race and Sanger (1962). Gene frequencies were calculated by following the examples given in Bhasin and Chahal (1996).

RESULTS AND DISCUSSION

The results of ABO blood groups are presented in Table 1. It is observed that, the blood group 'O' records the highest frequency (37.4 %), followed by 'A' (31.3 %) and 'B' (25.3 %). 'AB' phenotype occurs with 6%. The incidence of allele frequencies shows higher value for O (0.6185) followed by A (0.2093) and B (0.1722). The value of D/δ (0.0053) indicates that the population is under genetic equilibrium and the value of $1/N \chi^2$ (0.4634) d.f.1 0.50 > p > 0.30 shows goodness of fit of the sample.

Reviewing the ABO allele frequencies of other caste populations of Karnataka, it can be observed that a majority of them also recorded higher frequencies of blood group O than either B or A. $ABO*O$ is more prevalent followed by $ABO*B$ and then $ABO*A$ among Brahmins 0.7729 (Srivastava 1980), Adikarnatakas 0.6265 (Gangadhar and Reddy 2001) and Vishwakarmas 0.5485 (Jai Prabhakar et al. 2005). However, a few reported the more prevalence of $ABO*A$ compared to the average incidence of the 'B' allele, but the highest prevalence of $ABO*O$ among Shettys ($ABO*O=0.5612$) by Srivastava (1980) and Banerjee et al. (1988) observed $ABO*O=0.7021$ among Lingayaths.

Table 1: ABO blood groups and allele frequencies among Gangadikara Vokkaligas

Pheno- type	Observed number	Percentage observed	Expected number	Allele frequencies
O	56	37.4	57.39	$O = 0.6185$
A	47	31.3	45.42	$A = 0.2093$
B	38	25.3	36.38	$B = 0.1722$
AB	9	6.0	10.81	
Total	150	100.0	150.00	

$\chi^2 = 0.4634$, d.f. 1, $0.50 > p > 0.30$, $D/\sigma = 0.00530$

The Table 2 shows Rh (D)+ve phenotype occurs with a frequency of 97.33% and of Rh (D)-ve with 2.67%. The frequency of allele D and d were found to be 0.8367 and 0.1633 respectively. Majority of the caste populations of Karnataka show the highest frequency of $RH*D$ (0.7836) among Lingayaths (Banerjee et al. 1988) and Adikarnatakas $RH*D$ 0.8222 (Gangadhar and Reddy 2001). Jai Prabhakar et al. (2005) observed $RH*D=0.8214$ in Vishwakarmas. The present study show affinity with some caste populations reported from the neighbouring state of Karnataka.

Table 2: Rh (D) phenotype and allele frequency among Gangadikara Vokkaligas

Phenotype	Number observed	Percentage observed	Allele frequencies
Rh (D) +ve	146	97.33	$D = 0.8367$
Rh (D) -ve	4	2.67	$d = 0.1633$
Total	150	100.00	1.0000

REFERENCES

- Banerjee S, Roy M, Dey B, Mukherjee BN, Bhattacharjee SK 1988. Genetic polymorphism of red cell antigen enzyme haemoglobin and serum protein in fifteen endogamous groups of South India. *J Indian Anthropol Soc*, 23: 250-259.
- Bhasin MK, Walter H, Danker-Hopfe H 1994. *People of India. An Investigation of Biological Variability in Ecological, Ethno-economic and Linguistic Groups*. Delhi: Kamla-Raj Enterprises.
- Bhasin MK, Chahal SMS 1996. *A Laboratory Manual for Human Blood Analysis*. Delhi: Kamla-Raj Enterprises.
- Bhasin MK, Walter H 2001. *Genetics of Castes and Tribes of India*. Delhi: Kamla-Raj Enterprises.
- Gangadhar MR, Rajasekhara Reddy K 2001. ABO and Rh (D) blood groups among the Adikarnatakas of Karnataka. *J Hum Ecol*, 12(4): 327-328.
- Iyer Nanjundayya HV 1930. *The Mysore Tribes and Castes*, Mysore: Mysore University. Vol.III: 175-185.
- Jai Prabhakar SC, Gangadhar MR, Rajasekhara Reddy K 2005. ABO and Rh (D) Blood groups among the Vishwakarmas of Mysore District, Karnataka. *Anthropologist*, 7(1): 71-72.
- Race RR, Sanger R 1962. *Blood Groups in Man*. Oxford: Blackwell Scientific Publication.
- Sastri DB 1990. Sickle cell disease in some tribes of South India. In: *Human Variation in India*. Calcutta: Anthropological Survey of India, pp. 297-310.
- Singh KS 2003. *People of India-Karnataka*. New Delhi: Anthropological Survey of India, Affiliated East-West Press Pvt. Ltd. Vol.XXVI: 1496-1499.
- Srivastava RP 1980. A Study of ABO blood groups and PTC taste in a multicaste village of Karnataka. *Ind Anthropol*, 10: 61-66.